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BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte LEO P. DION and BRIAN J. PELLERITO

Appeal 2015-008222.[1]
Application 13/242,178.[2]
Technology Center 3700

Before MICHAEL C. ASTORINO, KENNETH G. SCHOPFER, and TARA L. HUTCHINGS, *Administrative Patent Judges*.

SCHOPFER, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the rejection of claims 1–14. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

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[1] Our decision references the Appeal Brief ("Appeal Br.," filed Mar. 27, 2015) and Reply Brief ("Reply Br.," filed Sept. 15, 2015), and the Examiner's Answer ("Ans.," mailed July 17, 2015) and Final Office Action ("Final Act.," mailed Nov. 6, 2014).

[2] According to Appellants, the real party in interest is GM Global Technology Operations LLC. Appeal Br. 3.

BACKGROUND

According to Appellants, "[t]he present disclosure relates to throttle control in a vehicle, and more particularly to throttle control using an accelerator pedal position sensor and an accelerator pedal pressure sensor." Spec. ¶ 1.

CLAIMS

Claims 1–14 are on appeal. Claim 1 is illustrative of the appealed claims and recites:

> 1. A system for diagnosing faults in an accelerator pedal position sensor and an accelerator pedal pressure sensor of a pedal, wherein the accelerator pedal pressure sensor is disposed on a contact surface of the pedal, the system comprising:
>
> a pedal sensor diagnostic module that (i) receives a pedal position from the accelerator pedal position sensor, (ii) receives a pedal pressure signal from the accelerator pedal pressure sensor, wherein the pedal pressure signal indicates an amount of pedal pressure applied to the pedal, (iii) diagnoses a fault in the accelerator pedal position sensor and the accelerator pedal pressure sensor based on a comparison between the pedal position and the pedal pressure, and (iv) generates a diagnostic signal based on the fault;
>
> a pedal override module that selectively outputs a pedal override signal based on the pedal position, the pedal pressure, and the diagnostic signal, wherein the diagnostic signal indicates which of the accelerator pedal position sensor and the accelerator pedal pressure sensor is faulty; and
>
> a throttle position control module that controls a position of a throttle based on the pedal position and the pedal override signal.

Appeal Br. 13.

REJECTION

The Examiner rejects claims 1–14 under 35 U.S.C. § 103(a) as unpatentable over Karatsinides[3] in view of Hirabayashi.[4]

DISCUSSION

Appellants present arguments with respect to the claims on appeal as a single group. *See* Appeal Br. 7–11. We select claim 1 as representative of this group.

With respect to claim 1, the Examiner finds that Karatsinides discloses a system as claimed except that "Karatsinides does not teach wherein the diagnostic signal indicates which of the accelerator pedal position sensor and the accelerator pedal pressure sensor is faulty." Final Act. 3–4 (citing Karatsinides Figs. 4, 6; col. 1, ll. 34–36; col. 4, ll. 28–32; col. 6, ll. 31–60; col. 8, ll. 5–15; col. 9, ll. 30–67). With respect to this claim limitation, the Examiner finds that Hirabayashi teaches using a diagnostic routine to determine which accelerator pedal sensor is faulty, and the Examiner concludes that "[i]t would have been obvious to one skilled in the art at the time of the invention to add Hirabayashi's diagnostic routine in order to determine which individual sensor was faulty." Final Act. 4 (citing Hirabayashi Figs. 4, 5; col. 5, ll. 40–45; col. 6, ll. 25–28). Further, in response to Appellants' arguments, the Examiner states:

> Karatsinides does not teach wherein the diagnostic signal indicates which of the accelerator pedal position sensor and the accelerator pedal pressure sensor is faulty. But Hirabayashi teaches individual sensor diagnostics and individual sensor malfunction identification (F_AP12 and F_AP22, figs. 4 and 5,

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[3] Karatsinides, US 8,340,863 B2, iss. Dec. 25, 2012.
[4] Hirabayashi et al., US 5,553,581, iss. Sept. 10, 1996.

> and col. 5 ll. 40–45 and col. 6 ll. 25–28, where the diagnostics determine which of the two sensors FP1 sand FP2s is faulty). It would have been obvious to one skilled in the art at the time of the invention to add Hirabayashi's diagnostic routine in order to determine which individual sensor was faulty. Individual sensor fault detection affords the advantage of simplified troubleshooting and repair wherein a user could replace only the single faulty sensor instead of guessing at which of the two sensors has malfunctioned.

Ans. 6–7.

As discussed below, we have reviewed Appellants' arguments regarding this rejection and we are not persuaded of reversible error.

As an initial matter, Appellants state that "the Examiner acknowledges that Karatsinides does not teach or suggest a pedal sensor diagnostic module that diagnoses a fault in an accelerator pedal position sensor and an accelerator pedal pressure sensor based on a comparison between the pedal position and the pedal pressure," and Appellants indicate that the rejection relies on Hirabayashi to overcome this deficiency in Karatsinides. Appeal Br. 8. Although the rejection states that "Hirabayashi teaches which of the accelerator pedal position sensor (FP1s) and the accelerator pedal pressure sensor (FP2s) is faulty," the rejection also states that Karatsinides teaches "diagnos[ing] a fault in the accelerator pedal position sensor and the accelerator pedal pressure sensor based on a comparison . . . between the pedal position and the pedal pressure." Final Act. 3–4. Further, the Examiner clarifies in the Answer that the rejection relies on Hirabayashi only insofar as Hirabayashi teaches individual sensor diagnostics and individual sensor malfunction identification, and not for teaching a comparison between two different types of sensors. Ans. 6.

Thus, we disagree with Appellants' assertions that the Examiner has acknowledged that Karatsinides does not teach a comparison for diagnosing a fault or that the rejection relies on Hirabayashi alone as teaching such a comparison. Further, we agree with the Examiner's findings regarding Karatsinides insofar as Karatsinides discloses a process by which the signals from a pedal actuation (pressure) sensor and a pedal position sensor are compared to determine if they are consistent, and if not, corrective action is performed. *See, e.g.*, Karatsinides Fig. 6.

Turning to Appellants' specific arguments, Appellants first argue that Hirabayashi "does not teach or suggest a pedal sensor diagnostic module that diagnoses a fault in an accelerator pedal position sensor and an accelerator pedal pressure sensor based on a comparison between the pedal position and the pedal pressure." Appeal Br. 8; *see also id.* at 10. However, as noted above, the rejection relies on Karatsinides as disclosing a comparison between the pedal position sensor and pedal pressure sensor and relies on the combination as discloses a determination as to which sensor is at fault. Thus, Appellants' argument against Hirabayashi individually is not persuasive of error.

Second, Appellants argue that Hirabayashi lacks any teaching or suggestion of diagnosing a fault in a pedal position sensor and a pedal pressure sensor. *Id.* at 9. In this regard, Appellants assert that the resulting combination "merely results in determining abnormalities in redundant monitored position sensors and monitoring a force sensor" or, in other words, "lack[s] any teaching or suggestion of diagnosing a fault in an accelerator pedal position sensor and diagnosing a fault in an accelerator pressure sensor." *Id.* We are not persuaded.

To determine whether there is an apparent reason to combine the known elements in the way a patent claims we "can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 418 (2007)); *see also id.* at 421 ("A person of ordinary skill is also a person of ordinary creativity, not an automaton."). Although Hirabayashi individually only teaches running a diagnostic routine on multiple sensors of the same type, the rejection relies on the combination to teach determining which of multiple sensors are faulty and concludes that determining which sensor is faulty in Karatsinides would have been obvious because individual sensor fault detection is desirable for the reasons stated by the Examiner. *See* Ans. 7–8. We are not persuaded that applying Hirabayashi's teachings to Karatsinides in order to provide individual sensor fault detection would have resulted only in detecting in redundant sensors, as asserted by Appellants. Rather than simply plugging Hirabayashi's specific routine into Karatsinides system, we determine that one of ordinary skill in the art would have known to modify Hirabayashi's routine for the specific sensors used in the Karatsinides system to correctly identify a fault in one of the sensors and to achieve the benefit of individual sensor fault detection, as described by the Examiner.

We are also not persuaded by Appellants' arguments raised in their Reply Brief. First, Appellants argue that Karatsinides does not teach diagnosing a fault and "only teaches determining whether the actuation status of the foot pedal is inconsistent with the actual physical position of the foot pedal." Reply Br. 2–3. However, we agree with the Examiner that an inconsistency or disagreement between the sensor values may be considered

a fault. In particular, Karatsinides discloses that if "the detected user actuation status is inconsistent with other indicators, then the process . . . initiates or performs corrective action." Karatsinides col. 9, ll. 30–32. Such initiation or performance of a corrective action indicates that an inconsistency is considered to be a fault. Further, to the extent Appellants argue that "[n]o actual fault of either sensor is recognized" (Reply Br. 3), we note that the rejection relies on the teachings of Hirabayashi regarding detecting a specific fault at a specific sensor.

Finally, Appellants argue that the "Examiner's interpretation of Hirabayashi is not entirely accurate, [and] Hirabayashi does not teach individual sensor diagnostics." Reply Br. 3. Specifically, Appellants assert

> Hirabayashi actually teaches a single sensor diagnostic routine that is used to detect a fault in the same type of sensor and not different [types of] sensors. Specifically, the same diagnostic routine is used to detect a fault in two angle sensors that detect the same type of information. The routine compares the output of each sensor to the same upper and lower limit values for determining whether the respective sensor is faulty. *See* col. 5 lines 39-64 of Hirabayashi.

Id. We are not persuaded of error. As described above, the rejection relies on modifying Karatsinides to include a modified version of Hirabayashi's routine that accounts for the two types of sensors used in Karatsinides's system, not simply plugging in Hirabayashi's routine into Karatsinides. Appellants acknowledge that Hirabayashi's diagnostic routine results in a determination as to whether each individual sensor is faulty, which is precisely the teaching the Examiner relies upon in concluding that claim 1 would have been obvious. *See* Ans. 6–7.

Based on the foregoing, we are not persuaded of reversible error with respect to the rejection of claim 1. Accordingly, we sustain the rejection of

claim 1. For the same reasons, we sustain the rejection of claims 2–14, for which Appellants do not raise separate arguments. *See* Appeal Br. 11.

CONCLUSION

We AFFIRM the rejection of claims 1–14 for the reasons provided above.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED